

WHAT IS CLAIMED IS

1. A porcine-derived α 1-6 fucosyltransferase having the following physico-chemical properties:

(1) action: transferring fucose from guanosine diphosphate-fucose to a hydroxy group at 6-position of GlcNAc closest to R of a receptor (GlcNAc β 1-2Man α 1-6)(GlcNAc β 1-2Man α 1-3)Man β 1-4GlcNAc β 1-4GlcNAc-R wherein R is an asparagine residue or a peptide chain carrying said residue, whereby to form (GlcNAc β 1-2Man α 1-6)-(GlcNAc β 1-2Man α 1-3)Man β 1-4GlcNAc β 1-4(Fuc α 1-6)GlcNAc-R

(2) optimum pH : about 7.0

(3) pH stability : stable in the pH range of 4.0-10.0 by treatment at 4°C for 5 hours

(4) optimum temperature : about 30-37°C

(5) inhibition or activation : no requirement for divalent metal for expression of activity; no inhibition of activity in the presence of 5 mM EDTA

(6) molecular weight : about 60,000 by SDS-polyacrylamide gel electrophoresis.

2. The porcine-derived α 1-6 fucosyltransferase of claim 1, which is purified from porcine brain.

3. A gene encoding porcine-derived α 1-6 fucosyltransferase.

4. The gene of claim 3, comprising a gene encoding an amino acid sequence as depicted in Sequence Listing, SEQ ID NO:2.

5. The gene of claim 3, comprising a nucleotide sequence as depicted in Sequence Listing, SEQ ID NO:1.

6. The gene of claim 3, comprising a gene encoding an amino acid sequence resulting from substitution, insertion, deletion or addition with respect to at least one amino acid of amino acid sequence depicted

in Sequence Listing, SEQ ID NO:2.

7. The gene of claim 3, comprising a nucleotide sequence resulting from substitution, insertion, deletion or addition with respect to at least one nucleotide of nucleotide sequence depicted in Sequence Listing, SEQ ID NO:1.

8. A gene which hybridizes to at least a part of a gene encoding α 1-6 fucosyltransferase and comprising nucleotide sequence as depicted in Sequence Listing, SEQ ID NO:1.

9. An expression vector comprising a gene of any one of claims 3 to 8 which encodes α 1-6 fucosyltransferase.

10. A transformant cell obtained by transforming a host cell with the expression vector of claim 9.

11. A method for producing a recombinant α 1-6 fucosyltransferase, comprising culturing the transformant cell of claim 10, and harvesting the α 1-6 fucosyltransferase from a culture thereof.

12. A recombinant α 1-6 fucosyltransferase produced according to the method of claim 11.

13. An α 1-6 fucosyltransferase derived from human, having the following physico-chemical properties:

(1) action: transferring fucose from guanosine diphosphate-fucose to a hydroxy group at 6-position of GlcNAc closest to R of a receptor $(\text{GlcNAc}\beta 1-2\text{Man}\alpha 1-6)(\text{GlcNAc}\beta 1-2\text{Man}\alpha 1-3)\text{Man}\beta 1-4\text{GlcNAc}\beta 1-4\text{GlcNAc-R}$ wherein R is an asparagine residue or a peptide chain carrying said residue, whereby to form $(\text{GlcNAc}\beta 1-2\text{Man}\alpha 1-6)-(\text{GlcNAc}\beta 1-2\text{Man}\alpha 1-3)\text{Man}\beta 1-4\text{GlcNAc}\beta 1-4(\text{Fuc}\alpha 1-6)\text{GlcNAc-R}$

(2) optimum pH : about 7.5

(3) pH stability : stable in the pH range of 4.0-10.0 by treatment at 4°C for 5 hours

(4) optimum temperature : about 30-37°C

(5) inhibition or activation : no requirement for divalent metal for expression of activity; no inhibition of activity in the presence of 5 mM EDTA

(6) molecular weight : about 60,000 by SDS-polyacrylamide gel electrophoresis.

14. The α 1-6 fucosyltransferase of claim 13, which is purified from a human cell culture medium.

15. The α 1-6 fucosyltransferase of claim 14, wherein the human cell culture medium is a human gastric cancer cell serum-free medium.

16. A gene encoding α 1-6 fucosyltransferase derived from human.

17. The gene of claim 16, comprising a gene encoding amino acid sequence as depicted in Sequence Listing, SEQ ID NO:10.

18. The gene of claim 16, comprising a nucleotide sequence as depicted in Sequence Listing, SEQ ID NO:9.

19. The gene of claim 16, comprising a nucleotide sequence from 198th adenine to 1919th guanine as depicted in Sequence Listing, SEQ ID NO:9.

20. The gene of claim 16, comprising a gene encoding an amino acid sequence resulting from substitution, insertion, deletion or addition with respect to at least one amino acid of amino acid sequence as depicted in Sequence Listing, SEQ ID NO:10.

21. The gene of claim 16, comprising a nucleotide sequence resulting from substitution, insertion, deletion or addition with respect to at

least one nucleotide of nucleotide sequence as depicted in Sequence Listing, SEQ ID NO:9.

22. A gene which hybridizes to at least a part of a gene encoding α 1-6 fucosyltransferase and comprising nucleotide sequence as depicted in Sequence Listing, SEQ ID NO:9.

23. The expression vector of any one of claims 16 to 22, which comprises a gene encoding human α 1-6 fucosyltransferase.

24. A transformant cell obtained by transforming a host cell with the expression vector of claim 23.

25. A method for producing a recombinant α 1-6 fucosyltransferase, comprising culturing the transformant cell of claim 24, and harvesting the α 1-6 fucosyltransferase from a culture thereof.

26. A recombinant α 1-6 fucosyltransferase produced according to the method of claim 25.

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